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ABSTRACT

Funded in the fall of 1971, the project "Discovery Through Outdoor Education" serves the handicapped children of Macomb County (Michigan). The participants are physically, mentally, and emotionally handicapped children who qualify for special education services. Objectives are to: (1) improve youngsters' achievement in regular school subjects, their self-concept, interpersonal relationships, and leisure skills; (2) train special education teachers to utilize the outdoors for providing learning opportunities to handicapped children; (3) test an outdoor education model for improving the learning and lives of these children; (4) educate and involve parents in the program; and (5) train and utilize college students as teacher aides for handicapped students. During the 1973-74 school year, workshops and laboratory sessions designed exclusively for special education teachers, and handicapped students were conducted by the project staff. These were evaluated using either standardized achievement tests or criterion-referenced measures. The results, presented in chronological order, indicated the project was successful in achieving its objectives in the area of teacher inservice training; the mean gain of the students attending the outdoor laboratories was not greater than that of the control group; and the outdoor education experience did not have any impact on student achievement in the traditional sense. (NQ)

MACOMB INTERMEDIATE SCHOOL DISTRICT
44001 Garfield Road
Mount Clemens, Michigan 48043
(313) 465-2101

ED 097168

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EVALUATION REPORT

SCHOOL YEAR 1973-74

"DISCOVERY THROUGH OUTDOOR EDUCATION"

ESEA TITLE III

July, 1974

PROJECT DIRECTOR

KRISTINE BOTT

SUPERINTENDENT

ROBERT G. LUTZ

ASSISTANT SUPERINTENDENT

FRED L. NOWLAND

EXTERNAL EVALUATORS

MAUREEN A. SIE
DONALD R. MARCOTTE
WAYNE STATE UNIVERSITY
DETROIT, MICHIGAN

RC008176

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INTRODUCTION

The project "Discovery Through Outdoor Education" was funded in the fall of 1971 to serve the handicapped children of Macomb County. The Macomb County Intermediate School District administers the Elementary and Secondary Education Act of 1965, Title III project. The project participants are children handicapped physically, mentally and emotionally who are qualified for special education services. All types of handicapped children residing in the county have taken part in the project during the three years of its existence.

The stated objectives of this project as described in the project abstract are as follows: "1) to improve youngsters' achievement in regular school subjects, their self-concepts, interpersonal relationships, and leisure skills, 2) to train special education teachers in the utilization of the outdoors for providing learning opportunities to handicapped children, 3) to test an outdoor education model for improving the learning and lives of handicapped youngsters, 4) to educate and involve parents in the program, 5) and to train and utilize college students as teacher aides for handicapped students."

The project was evaluated by Macomb Intermediate School District research personnel during the first two years of its operation. At the end of the second year, the project staff was advised by the Michigan Department of Education to include student achievement as part of the project evaluation. In addition, the project also committed itself to the preparation of an outdoor education handbook.

The outdoor education manual is nearing completion at this writing.

The manual deals with various aspects of outdoor education for handicapped children and is accompanied by four filmstrips and cassettes.

The first filmstrip and cassette combination describes the philosophy of outdoor education. The second and third filmstrips and cassettes focus on the "how to" aspects of an outdoor laboratory experience. The fourth filmstrip and cassette provide information concerning the specifics of preparation and follow-through when working with impaired children.

EVALUATION

During the school year 1973-74, all workshops and laboratory sessions conducted by project staff were evaluated utilizing either standardized achievement tests or criterion-referenced measures. The project was evaluated in light of the four specific objectives of the third year.

OBJECTIVES NO. 1 AND NO. 2:

> The project will provide in-service training and staff development in outdoor education for the special education teachers of Macomb County so they may gain knowledge of teaching in the out-of-doors. From July, 1973 through June, 1974, a minimum of eight workshops, one day to two weeks in length, will be held in which the special education teachers' behavior will be measured by 1) the instructor's assessment, 2) a task check list and 3) teacher log book. Success will be determined by the instructor and a 90% or better attendance on an hourly basis.
>
> Provide in-service training and staff development in outdoor education for the special education teachers of Macomb County so they may apply outdoor education techniques with their own classes attending residential outdoor laboratories for the length of three to five days at Camp Rotary. From July, 1973 through June, 1974, the teachers will keep a daily activity log and a task check list. Success will be determined by the successful completion of all relevant items on the task check list.

OBJECTIVES NO. 3 AND NO. 4:

> From July, 1973 through June, 1974, teachers trained in outdoor education will provide reading and arithmetic instruction three days per month for a period of eight months in a residential laboratory that will supplement the conventional classroom instruction. This reading and arithmetic instruction will be given related to the ongoing out-of-doors experiences for two classes of elementary mentally impaired students from the Keith Bovenschen School. The students will gain knowledge in reading and arithmetic. Using the Peabody Individual Achievement Test, the mean gain of the students attending the outdoor laboratories will be statistically greater than the mean gain of a control group. There will also be an increase in the mean score for the experiemental students on teacher-constructed tests.

The results are presented in chronological order. The workshops exclusively designed for special education teachers are presented first, followed by laboratory sessions involving both special education teachers and handicapped students.

KUESTER WORKSHOP:

In October of 1973, a one-day workshop was conducted by the project to train teachers in the arts and crafts skill area. A total of 73 people participated in the workshop; the participants included 45 special education teachers, 3 directors of special education, 5 consultants, 10 classroom teachers and 10 special education teacher aides. Excluding teacher aides, all 63 participants were pre- and posttested on a 15-item criterion-referenced measure designed to assess the specific objectives of the workshop (Appendix A). The pretest mean and standard deviation are 8.14 and 3.98; the posttest mean and standard deviation are 18.02 and 1.68 respectively. The total possible score for the 15-item CRT was 20. The workshop was a highly successful one based on attendance and knowledge gained by the workshop participants.

WORKSHOP ON THE THEORY OF OUTDOOR EDUCATION AND SKILLS:

A ten-week workshop (January 7 - March 11, 1974) was conducted by the project staff in collaboration with Michigan State University. A total of twenty-two educators participated in this in-service training workshop; the participants comprised two consultants, ten regular classroom teachers and ten special education teachers. All participants were pretested and posttested on a 14-item instrument with a total possible score of 96 (Appendix B). The results are shown in Table 1 below. The workshop was highly successful in meeting its goals.

Table 1. The pretest and posttest results of workshop on the theory of outdoor education and skills.

	N	MEAN	S.D.	t
Pretest	22	35.43	24.82	11.61**
Posttest	22	94.26	8.64	

** $P < .001$

HIGGINS LAKE WINTER WORKSHOP:

The workshop held in January, 1974 at Higgins Lake Conservation School was participated in by two directors of special education, three consultants, one secretary, one special education aide and six special education teachers. The theme of the two-day workshop was centered on outdoor theory and skills. The participants were pretested and posttested by a 13-item objective-referenced measure (Appendix C) with a total possible score of 38. The pretest mean and standard deviation are 7.92 and 3.43, and the posttest mean and standard deviation are 15.00 and 3.24 respectively. Although participants made significant gains,

the posttest result indicated that participants scored less than half of the items (39%). Due to the small sample size, the results were not analyzed statistically.

BACKPACK WORKSHOP:

A backpack workshop was conducted for six special education teachers, a regular classroom teacher, two special education consultants, and a student from Wayne State University. The ten participants were pre- and posttested on a 12-item measure with a total possible score of 16 (Appendix D). The participants started with some knowledge of backpacking ($\bar{X}$ = 5.80, s.d. = 3.68) and gained considerable knowledge as a result of the workshop ($\bar{X}$ = 15.8, s.d. = .42). Identical measures were used for pre- and posttesting, items often were rearranged on the posttest; thus only one of the two instruments used is appended throughout the evaluation report.

SALK SCHOOL - TYPE A:

A winter camp laboratory session was given at the beginning of 1974 to two groups of mentally impaired children. Altogether, twenty-one students and two teachers participated in the three-day laboratory. Students were made aware of the relationship of plants, animals and nature, the effect of winter season on plants, animals and human beings, and their adaptation to winter, etc.

One group of eleven students was pre- and posttested by their teachers on a 14-item CRT with a total possible score of 19 (Appendix E). The pretest showed that most of the students had considerable knowledge about their environment ($\bar{X}$ = 12.45, s.d. = 1.51). The posttest data revealed that

their knowledge was enhanced by the laboratory experience ($\bar{X}$ = 17.91, s.d. = 1.14). A second group of ten students was pre- and posttested on a second measure (Appendix F). The results were quite impressive for this group of mentally impaired students. The pretest $\bar{X}$ and s.d. were 5.70 and 2.01 and the posttest $\bar{X}$ and s.d. were 11.00 and 1.63 respectively. Learning seemed to have taken place in more relevant and naturalistic setting.

PETERS SCHOOL - TRAINABLES:

A series of three-day laboratory learning sessions was held from February through May of 1974 for eleven groups of students ranging from ages 3.5 to 24. The general I.Q. range was approximately 30-50. The groups were composed of 98 male and female students and eleven teachers.

Topics of these sessions were focused on winter camping, first aid skills, safety rules, cooking, environmental awareness and basic skills for daily living. Each workshop session was evaluated by teacher-constructed criterion-referenced measures (Appendices G1-G10). The pre-test and posttest data are presented in Table 2. The laboratory experience provided each student with the opportunity to spend nights away from home. Students were exposed to new environments and taught to adapt to new surroundings. They learned the necessary skills in order to become more self-reliant and less dependent on members of their immediate families. The results clearly indicated that when the objectives are specific and appropriate, the severely mentally impaired youngsters could be helped to increase their awareness of their environment.

Table 2. Comparisons of means and standard deviations and t-ratios of trainable mentally retarded students in outdoor educational laboratory sessions.

Session No.	N	$\bar{X}$	SD	t
I Pretest	18	6.83	1.65	6.71**
Posttest	18	9.44	1.04	
II Pretest	11	6.55	2.11	2.49*
Posttest	11	8.45	3.14	
III Pretest	9	2.67	1.80	10.06**
Posttest	9	5.78	2.33	
IV Pretest	8	4.00	2.07	3.77**
Posttest	8	7.75	1.39	
V Pretest	9	1.89	.93	2.83**
Posttest	9	2.56	.73	
VI Pretest	10	5.90	2.69	4.98**
Posttest	10	9.40	1.51	
VII Pretest	11	4.36	1.21	1.79*
Posttest	11	5.09	.94	
VIII Pretest	13	6.00	2.52	17.36**
Posttest	13	11.85	3.31	
IX Pretest	10	9.70	2.75	4.29**
Posttest	10	12.70	2.50	
X Pretest	9	19.22	4.47	4.03**
Posttest	9	23.33	2.01	

*P $<$ .05
**P $<$ .01

EDUCABLE MENTALLY IMPAIRED, HEARING IMPAIRED, PHYSICALLY IMPAIRED, ORTHOPEDIC AND VISUALLY IMPAIRED:

A group of ten junior high male and female students participated in the three-day outdoor learning laboratory session. They were in the 13-15 age range with a general I.Q. range of 50 to 70. They were pretested and

posttested with a 7-item objective-referenced measure (Appendix H). Test results revealed that the students had mastered half of the objectives before instruction (Pretest $\bar{X}$ = 3.8, s.d. = 1.40) and at the end of the session, they learned practically all seven objectives ($\bar{X}$ = 6.6, s.d. = .70) included in the measure. Evidence seemed to show that the number of objectives was rather limited and the objectives were too easy for the students. The objectives and instructional materials used in these outdoor laboratory sessions ought to be examined by the students' regular classroom teachers. The items seemed to be quite superficial and lacking in substance. In planning curricular materials, student characteristics must be taken into account.

Three groups of hearing impaired accompanied by teachers were participants to learning laboratories ranging from two days and two nights to three days and three nights. The first group consisted of fifteen boys and girls ranging from 13 to 16 in age. Eight of these students have profound hearing loss, seven have moderately severe hearing loss. They were pre- and posttested by two criterion-referenced measures dealing with watershed photography, trees, birds and insects, and water pollution (Appendix I-1 and I-2). The results are shown in Table 3. Students made little gain in knowledge on water pollution; however, they made significant gain on the second measure, which dealt with trees, birds, insects and watershed photography.

A second group of twenty-six hearing impaired students were in the age range of 8 to 12. Eleven of these students have profound hearing loss, and fifteen have moderately severe hearing loss. They were pre- and posttested by a 20-item CRT on map skills (Appendix J). These students

had knowledge of nearly half of the objectives at the beginning of the laboratory session. The results in Table 3 revealed that these students made statistically significant gains at the end of the learning laboratory session.

Table 3. Comparisons of means, standard deviations and t-ratios of hearing impaired students.

Group		N	$\bar{X}$	SD	t
I-1	Pretest	15	6.60	.91	.72
	Posttest	15	6.87	1.73	
I-2	Pretest	15	11.8	2.51	2.67**
	Posttest	15	13.8	3.19	
II	Pretest	26	14.38	4.79	5.83**
	Posttest	26	17.88	4.52	
III	Pretest	9	13.33	1.87	1.21
	Posttest	9	14.11	.93	

** $P < .01$

A third group of nine hearing impaired youngsters were in the age range of 8 to 11; four have profound hearing loss and five have moderately-severe hearing loss. They were pre- and posttested by a 16-item CRT dealing with small animals and plants in the woods (Appendix K). Students seemed to have benefited very little from the experience as measured by the CRT. This should not be interpreted as completely negative. Information contained in Table 3 merely showed that students knew more than 80% of the objectives upon entry and that they made little gain at the end of the learning session. A reexamination of the objectives for the hearing impaired students seems to be in order.

Three groups of fifty-five physically impaired (orthopedic) youngsters ranging in ages from 8 to 13 participated in three learning laboratory sessions. They were pretested and posttested by a 23-item, a 10-item and a 16-item measure dealing with plants, animals, outdoor safety rules, and pollution (Appendices L, M, and N). Test results showed that the groups were performing at 49%, 43% and 89% of comprehension in pretesting, and in posttesting, the students' levels were raised to 90%, 61% and 89% respectively. Evidence seemed to indicate that these wheelchair-confined students could handle more challenging objectives. In the second session, students failed to grasp approximately 40% of the items included in the measuring instrument. It became apparent that objectives need to be scrutinized for content validity and the accompanying instruments require revision. The third group evidently knew most of the objectives tested and actually dropped a little in posttesting.

The last group involved fourteen blind and visually impaired youngsters ranging in ages 8 to 10. Students were evaluated by an 11-item objective-referenced measure concerning forest, rivers and lakes, and outdoor cooking, etc. (Appendix O). In pretesting, students were performing at 71% of comprehension and they attained 84% of comprehension in posttesting. Although the mean gain was statistically significant, the objectives need to be reexamined next year. Handicapped students falling within normal range of intelligence should receive program instruction more appropriately reflecting their capabilities.

EXPERIMENTAL AND CONTROL GROUPS OF TRAINABLE SPECIAL EDUCATION STUDENTS:

In September, 1973, a group of forty-four students were randomly selected from Keith Bovenschen School to serve as experimental and control

groups. The experimental group received eight sessions of learning laboratory instruction throughout the 1973-74 school year, and the control group received no treatment. Students in the experimental group received instructions on number concepts utilizing outdoor objects such as sticks, leaves, stones and wood, etc. They also learned to write letters to their respective homes and, more important, to be more self-reliant and independent.

Since classes were held outdoors in naturalistic settings, students were made aware of the new stimuli and the world about them. Measuring concepts, art lessons, and concepts of time and space were taught with objects collected outdoors.

Students were also expected to share chores at the camp, and group activities included art projects, group singing, nature walk, and tobogganing. The major emphasis of the sessions was on psychomotor skills, self-reliance and cognitive skills.

Sessions 3 through 8 were evaluated by teacher-made achievement tests (Appendices P1-P6). Table 4 presents the levels of accomplishment in percentages. Generally speaking, the items were simple and on concrete basis. Students made statistically significant gains in all sessions evaluated with the exception of session No. 7. When the results were analyzed in percentages, it was evident that in almost all instances, objectives were clearly too easy for the students. However, the posttest results showed that students failed to achieve a minimum of 75% level of accomplishment, except in session No. 4.

Table 4. Percent of accomplishment on objectives attained in laboratory sessions 3 through 8 in the experimental group by trainable students

Session No.	No. of Students	Pretest % of Accomplishment	Posttest % of Accomplishment
3	22	52.40%	67.27%
4	25	75.20%	80.27%
5	19	54.40%	65.93%
6	20	24.00%	61.00%
7	26	64.11%	61.11%
8	24	57.90%	65.00%

It is suggested that in planning for future programs, the responses made by the students this year be analyzed by teachers and project staff in order to assess the content validity of the objectives. By the same token, the items included in the criterion-referenced measures also need to be expanded and revised. The easy objectives can be replaced by more appropriate ones, and the difficult ones revised so that they will be more suitable to the students' level of ability.

In an attempt to assess the overall effect of the program on the trainables, two standardized instruments were used. The Boehm Test of Basic Concepts (BTBC) is basically an aptitude test which consists of fifty items. The test was designed for kindergarten, first and second grade students.

The Peabody Individual Achievement Test (PIAT), which generally serves as a screening device in measuring achievement in the areas of mathematics, reading, spelling, and general information was used. Students in both

experimental and control groups failed the reading comprehension subtest. On the average, students (11 - 15 years of age) in both groups functioned at about middle of first grade level.

The results are shown in Tables 5 and 6. Students in both groups made statistically significant gains in reading and arithmetic as measured by the PIAT and in general aptitude as measured by the BTBC. The experimental group made greater gains than the control group as measured by the BTBC. However, since the two groups were different and their achievement levels were extremely low, results should be interpreted with caution. Clearly, this type of achievement test is not suitable for testing trainables.

TABLE 5

COMPARISON OF EXPERIMENTAL AND CONTROL

GROUPS USING STUDENT'S t-TEST

Variable	df	$\bar{X}$	s^2	t	F[a]
Boehm - Pretest	42			-0.17	1.48
Experimental		23.73	95.54		
Control		24.18	64.44		
Boehm - Posttest	42			2.94**	0.32
Experimental		36.41	75.87		
Control		29.05	62.05		
PIAT - Pretest	43			-0.27	1.53
Experimental		42.91	221.54		
Control		44.27	340.02		
PIAT - Posttest	43			-0.33	1.10
Experimental		48.22	403.91		
Control		50.14	367.36		

[a]Test of Variances

**$p < .01$

TABLE 6

ANALYSIS OF GAINS

FOR THE EXPERIMENTAL AND CONTROL GROUPS

Variable	df	$\bar{X}$	s	t
Experimental				
Boehm	21	12.68	11.46	5.19**
PIAT	22	5.30	9.76	2.61*
Control				
Boehm	21	4.86	4.54	5.03**
PIAT	21	5.86	10.16	2.71*
Experimental vs Control				
Boehm[a]	28			2.97**
PIAT	43			-0.19

[a]Variances significant at $p < .01$, therefore approximate degrees of freedom used.

*$p < .05$

**$p < .01$

CONCLUSIONS AND RECOMMENDATIONS

The project was successful in achieving its objectives in the area of in-service training for teachers. This was evidenced by attendance record, evaluation results as measured by criterion-referenced tests, and detailed records and logbooks maintained by project staff and teachers.

Handicapped students made statistically significant gains in reading and arithmetic and general aptitude. And the experimental group made statistically significant gains in achievement in the various laboratory sessions as measured by teacher constructed instruments. However, it cannot be stated that the experimental group did better than the control group in terms of reading and arithmetic achievement. In other words, the mean gain of the students attending the outdoor laboratories was not greater than the mean gain achieved by the control group. However, the experimental group did better than the control group in terms of general concepts measured by BTBC. Thus, the outdoor education experience did not have any impact on student achievement in the traditional sense. In view of the level of students in terms of aptitude, aiming for school achievement per se seems to be of little practical value.

Outdoor education for mentally or physically impaired students provides an alternative in special education. Students can develop a more positive outlook about their environment and become more aware of nature and surrounding objects. By living away from homes, students can become less dependent and more self-reliant in meeting their own

daily needs. However, it is rather unlikely that the severely mentally impaired students can be expected to progress appreciably in cognitive skills traditionally required in a classroom setting.

The results of the third year evaluation clearly indicated that these special education children can be helped to lead a fuller life, and acquire or improve basic skills which are essential in meeting their daily needs. It also pinpointed a number of areas that need special attention by the project personnel and teachers working with special education students.

The criterion-referenced tests revealed that most of the objectives need scrutiny for content validity. The many CRT's ought to be combined to form more comprehensive measures, particularly when measuring similar types of students. Some of the objectives can be discarded or vastly improved. Similar types of handicapped children can be measured by a common set of objectives which should be of high quality and more comprehensive in nature.

Some measure of self-concept can be added to next year's evaluation, whether it be in the form of systematic teacher observation or in some kind of self-report format. There should be more involvement of parents who in turn can reinforce skills on daily living acquired in the learning laboratories and which are essential for their children to function as independent and self-reliant individuals in society.

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APPENDIX

APPENDIX A

(Kuester Workshop)

NAME _____

POSITION _____

SCHOOL DISTRICT _____

BACKGROUND: Special Ed. Personnel _____
General Ed. Personnel _____
Administrative _____
Other (Specify) _____

PRE TEST FOR CREATIVITY OUTDOOR EDUCATION WORKSHOP:

1. Give 3 examples of craft projects using pine cones;
   a. _____
   b. _____
   c. _____

2. List 3 of the seven materials needed for making parchment:
   a. _____
   b. _____
   c. _____

3. When making a gods eye, you need sticks and _____

4. What solution must you expose ozlid paper to in your final step? _____

5. What is a decidious tree? _____

6. A white pine has _____ (number of) needles.

7. A red pine has _____ (number of) needles.

8. Mushrooms are a sign of the _____ process in wood.

9. What is inside a goldenrod gall? _____

10. List 3 of the 5 materials needed in a leaf printing process:
    a. _____
    b. _____
    c. _____

11. Name one area where erosion has occurred at Camp Rotary: _____

12. You must expose ozlid paper to a lamp or the _____

13. In making the paste for the nature parchments, mix Elmers Glue with _____

14. The correct method of manipulating charcoal is _____

15. Comments: (strengths and weaknesses) _____

APPENDIX B

Name_____

Questions Concerning the Nature and Scope of Outdoor Education

1. The two phases of outdoor education may be described as _____

_____

_____(10 pts.)

2. Suggest three learning principles that are inherent in outdoor education. (9 pts.)

a._____

b._____

c._____

3. To what goals of education do outdoor learning experiences make a major contribution? (6 pts.)

a._____

b._____

c._____

4. Outdoor education makes certain unique contributions to the curriculum. Suggest five of them. (10 pts.)

1._____

2._____

3._____

4._____

5._____

5. Outdoor education has potential as a change agent and affects three major areas. (9 pts.)

1._____ 2._____

3._____

6. What are three of the unique learning experiences in resident outdoor education? (6 pts.)

1. _____

_____

2. _____

_____

3. _____

_____

7. Suggest three teaching techniques that are effective in the outdoors. (9 pts.)

1. _____

2. _____

3. _____

8. What are three unique features of learning in outdoor laboratories as contrasted to classrooms. (6 pts.)

1. _____

_____

2. _____

_____

3. _____

_____

9. The implications of outdoor skills and interests for the affective domain of education are (5 pts.) _____

_____

_____

10. Suggest three kinds of outdoor areas that have potential as laboratories for learning. (6 pts.)

1. _____

2. _____

3. _____

11. Check the statements that characterize outdoor education. (10 pts.)

(a) ____Outdoor education is a separate discipline in the school curriculum.

(b) ____Outdoor education is a means of curriculum enrichment.

(c) ____Science education and outdoor education are synonymous.

(d) ____"Education for the Outdoors" refers to teaching manipulative skills for outdoor recreation and outdoor interests.

(e) ____Outdoor education and nature study are synonymous.

12. The law in Michigan pertaining to resident outdoor education permits school districts to (4 pts.)_____

_____

_____

13. Education in the outdoors means (4 pts.)_____

_____

_____

_____

14. What would be three essentials in planning a field trip? (6 pts.)

1._____

2._____

3._____

APPENDIX C

WINTER OUTDOOR EDUCATION WORKSHOP
HIGGINS LAKE CONSERVATION SCHOOL
JANUARY 18, 19, 1974

NAME _____
SCHOOL DISTRICT _____
POSITION _____

1. Insulating factor in outdoor clothing and sleeping bags is called _____. (1 pt.)

2. When backpacking, it is important to dress properly. In the winter it is best to wear _____. (1 pt.)

3. Bear paw snowshoes are the best type to use for hiking. True____ False____ (1 pt.)

4. Cross-country skis are _____ and _____ than downhill skis. (2 pts.)

5. Ski poles are never used in cross-country skiing. True____ False____ (1 pt.)

6. Safety bindings should always be worn with cross-country skis. True____ False____ (1 pt.)

7. Many ice fishermen use an apparatus which does not require constant attention and signals when a fish is caught. It is called a/an _____. (1 pt.)

8. The Graduated Length Method of teaching skiing by-passes the conventional approach to skiing and goes directly to the _____ method. (1 pt.)

9. The three essential things to provide for in backpacking are: (3 pts.)
   a. _____
   b. _____
   c. _____

10. To be really comfortable, a pack needs three features. They are: (3 pts.)
   a. _____
   b. _____
   c. _____

11. Two types of bindings for cross-country skis are: (2 pts.)
   a. _____
   b. _____

12. What is the only essential equipment in orienteering? _____(1 pt.)

13. Orienteering is most similar to: (1 pt.)
   a. Car rally
   b. Cross-country skiing (Choose one)
   c. Down-hill skiing

APPENDIX D

BACKPACKING WORKSHOP

May 30, 1974

1. What percentage of your weight should a novice carry on his back?

_____

2. Why do we wear wool clothing outdoors rather than cotton clothing?

_____

3. Why would you use a poncho rather than a good raincoat or rainsuit?

_____

4. Why do we use billy-cans to cook in?

_____

5. What is the primary concern of wilderness backpacking?

_____

6. Name five items to look for in choosing a quality backpack.

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

7. What would you carry other than water in a canteen?

_____

8. Why do we use a groundcloth for an overnight camp?

_____

9. Why should we wear a hat to bed?

_____

10. Why is a mummy bag better than a rectangular sleeping bag?

_____

BACKPACKING WORKSHOP
May 30, 1974

11. As an outdoor group leader, you should look for signs of _____ in your students, which can be an instant killer.

12. What is gorp?

_____

COMMENTS:

APPENDIX E

WINTER CAMP LAB
pre test / post test
Intermediate Type A Special Education
Dr. Jonas Salk Elementary School
Fraser, Michigan

Name _____

Date _____

1. Water freezes at _____ degrees.

2. Name 3 changes that happen outside in winter.
   1.
   2.
   3.

3. Evergreens do not have leaves, they have _____.

4. Name 3 birds we could find in Michigan in the winter.
   1.
   2.
   3.

5. What does hibernate mean? _____.

6. Name 2 animals that hibernate.
   1.
   2.

7. Some birds stay here for the winter, but some birds fly _____ for the winter.

8. What does the squirrel do to get ready for winter? _____

   _____.

9. How do animals change to keep warm in the winter? _____

   _____.

10. What are some winter sports? _____.

11. What happens to plants in the winter? _____.

12. Where do birds look for food in the winter? _____

    _____.

13. A beautiful, bright red cardinal is a (male - female).

14. Why doesn't the river at Camp Rotary freeze solid? _____

    _____.

APPENDIX F

Student: _____

Teacher: _____

CAMPING LABORATORY: Pre test and post test

This test is recorded by the teacher.

1. Which one is rough? (Show 2 kinds of bark)
   Which one is smooth? birch/oak
   Pre test answer _____
   Post test answer _____

2. Which one has pointed edges? (Show pine needles and oak leaf)
   Which one has rounded edges?
   Pre test answer _____
   Post test answer _____

3. How does an animal keep warm in winter?
   Pre test answer _____
   Post test answer _____

4. What do animals eat in winter?
   Pre test answer _____
   Post test answer _____

5. Which animals sleep all winter?
   Pre test answer _____
   Post test answer _____

6. Which animals might we see at camp?
   Pre test answer _____
   Post test answer _____

7. Which birds might we see at camp?
   Pre test answer _____
   Post test answer _____

8. What food do birds look for?
   Pre test answer _____
   Post test answer _____

9. What animal made this track?

   Pre test answer _____
   Post test answer _____

10. What kind of clothes do we wear in winter?
    Pre test answer _____
    Post test answer _____

11. How can we tell it's winter outside?
    Pre test answer _____
    Post test answer _____

12. Why do we have steamy breath in winter?
    Pre test answer _____
    Post test answer _____

APPENDIX G-1

MACOMB INTERMEDIATE SCHOOL DISTRICT
WINTER CAMP PRE/POST TEST
February 20, 1974

Name _____

1. John has frostbite on his fingers. How can you warm them?
   a. Put them in very hot water
   b. Rub them with snow
   c. Put them in warm water

2. Bill stayed out in the cold too long. He is awake. You bring him inside and wrap him in warm blankets. Then what do you do?
   a. Give him a cold bath to keep him breathing.
   b. Give him something hot to drink.

3. Where can we put our hands on our body to warm them?
   a. On your knees
   b. Under our armpits
   c. On your head

4. When going outdoors in the winter, it is most important to dress warmly. If it is cold and wet, you should wear:
   a. Shoes
   b. Slippers
   c. Rubber boots

5. The small material used to start with when making fires outdoors is:
   a. Trees
   b. Wax
   c. Tinder

6. When going up a sledding hill, you should walk up the:
   a. Side
   b. Middle

7. When cooking a foil dinner, you do not need:
   a. A pan
   b. Fire
   c. Foil

8. To look closer at the moon and stars, you can use:
   a. Mirror
   b. Telescope

9. In cutting and gathering wood for fires, you should use:
   a. Broken branches lying on the ground
   b. Trees that are still growing

10. A Buddy Burner is:
   a. A tin can stove
   b. Two-man sled

APPENDIX G-2

SCHOOL _____ DATE _____

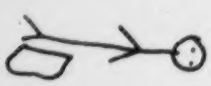
NAME _____ TEACHER _____

_____ - TEST

1. What types of food would you take on a hike?

   a) can of pudding
   b) sandwich
   c) celery sticks
   d) can of tuna

2. If someone is in shock, what do you do?

   a) 

   b)

   c)

3. Which is the right way to stop bleeding?

   a)

   b)

4. What do you do for this cut?

   a) hold a pad on it
   b) run for help

5. If your clothes catch fire:

   a) run to the bathroom and get in the shower
   b) lie down and roll slowly
   c) stand up and beat out the flames

6. If cooking grease catches fire:

   a) put a lid on it
   b) pour water over it

7. If you burn yourself while cooking, you:

   a) call a doctor
   b) put it in cold water, bandage it and call a doctor

8. What do you do for a cut or scrape from getting infected?

   a) nothing, just leave it alone
   b) wash it with soap and water and bandage it
   c) just wash it out

NAME _____ SCHOOL _____

9. What 2 things go into making a fire?

   a) tinder
   b) coat hangers
   c) kindling

10. What does a terrarium have in it?

   a) bugs
   b) plants
   c) water

11. What is a tree rubbing?

   a) when your back itches, you rub it against a tree
   b) when you rub a crayon over a piece of paper or a tree stump or tree bark
   c) when you rub your hands against a tree

12. We use a "buddy burner" to:

   a) sew
   b) cook

APPENDIX G-3

DAY TRAINING

TEACHER: _____ DATE: _____

CHILD: _____ AGE: _____

_____ will be able to identify the following items by pointing to them when asked to "show me the _____."

	PRE-TEST	POST-TEST
tree		
leaf		
stick		
stone		
bird		
campfire		
sky		
grass		
cloud		
TOTALS	_____	_____

APPENDIX G-4

PRIMARY CAMP OBJECTIVES

_____ _____ 1. Given a rock and a stick, the child will pick up the rock when asked.

_____ _____ 2. Given a rock and a stick, the child will pick up the stick when asked.

_____ _____ 3. Given a rock and a leaf, the child will pick up the leaf when asked.

_____ _____ 4. When standing in front of a hill, the child will run up the hill when asked.

_____ _____ 5. When standing in front of a hill, the child will walk up the hill when asked.

_____ _____ 6. When standing on top of a hill, the child will run down the hill when asked.

_____ _____ 7. When standing on top of a hill, the child will walk down the hill when asked.

_____ _____ 8. When standing in front of a hill, the child will go up the hill when asked.

_____ _____ 9. When standing on top of a hill, the child will go down the hill when asked.

GENERAL CAMP OBJECTIVES

1. The children will spend the night away from home.
2. The children will be exposed to a new environment and must adapt to it.
3. The children will be cooking and eating out-of-doors.
4. The children will be walking on new and different types of terrain.
5. The children will be doing music activities in new surroundings.
6. The children will be playing on a big playground and learning to use the equipment and use it safely. (swings, slides, etc.)
7. The children will be listening to new sounds:
   a. bridge creaking
   b. river running
   c. birds in the woods
   d. campfire crackling

APPENDIX G-5

SCHOOL _____ TEACHER _____

PRE-TEST

HAVING CHILDREN IDENTIFY DIFFERENCES BETWEEN A BUD ON A TREE AND A LEAF.

NAME	IDENTIFY BUD	IDENTIFY LEAF	ABLE TO TELL DIFFERENCE

APPENDIX G-6

Pre-Post Test - Secondary Group III
(V. Bell)

Date_____

Name_____

1. A "critter" is a funny name for:

   a) a cookie
   b) an animal
   c) shoes

2. To cook food, we always need:

   a) a spoon
   b) a kettle
   c) something hot (heat)

3. We need tinder, kindling, and wood to make:

   a) a fire
   b) a candle
   c) a critter cage

4. Which is farthest away:

   a) the moon
   b) Camp Rotary
   c) your home

5. To see the stars better we use

   a) a camera
   b) a radio
   c) a telescope

6. A special doll to help tell a story is:

   a) a paper
   b) a puppy
   c) a puppet

7. When you go up or down a hill, it helps if you go:

   a) backwards
   b) frontwards
   c) sideways

8. Some things dissolve in water and others stay whole. True or False

9. Magnify means make smaller. True or False

10. If you get burned, the best help is to put it in cold water. True or False

11. The moon is small enough to hold in your hand. True or False

12. Water is always blue. True or False

APPENDIX G-7

TEACHER _____ DATE _____

SCHOOL _____

CHILD _____

PRE/POST TEST

Firebuilding

1. When building a fire tinder is necessary. You might use dry golden rod or:

   1) snap wood
   2) hard wood

2. To burn right a fire needs:

   1) air
   2) sticks placed very close together

Tool Use

3. When chopping small sticks with a hand axe:

   1) always put sticks flat on ground
   2) lay the stick on a stump or log

4. If you are not using the axe:

   1) lay it on the ground near you
   2) stick it in a stump or log

Outdoor Cooking

5. Before using shiny pots over a fire the pot should be coated with:

   1) liquid dish soap
   2) bacon fat

6. The rocks used in a "beanhold" should be about the size of:

   1) a bowling ball
   2) your fist

Trail Blazing

7. The best way to rest during a long hike is:

   1) sitting up with your hands resting on your head
   2) laying flat on your back with your feet propped in the air

APPENDIX G-8

CAMP PRE/POST TEST

1. We use a _____ _____to cook our food on.
2. A buddy burner is used to _____food on.
3. In the spring we see_____, _____, _____and _____. (v.s. things seen in winter).
4. Is it warmer or colder in the spring? (v.s. winter)
5. Is a fire hot or cold?
6. You use_____, _____, and _____to make fire.
7. Point to the long stick. Point to the short stick.
8. What helps you see the stars and moon easier?
9. Find (point to) sky, grass, sun, tree, flower.
10. Stand in front of the tree.

at the side	go around
in back	go between

11. What do you need when you go fishing?
12. Where do you find worms so you can catch fish?
13. What do you see in the sky at night? In the morning?
14. What are three important meals you eat each day?

    morning_____,noon_____,after school_____

15. Can you make a campfire on the grass?

APPENDIX G-9

TEACHER _____ DATE _____

SCHOOL _____

CHILD _____

When shown pictures and asked a question, each child will indicate his/her answer by pointing. In front of each number will be: ____ for correct or ____ for incorrect.

____ 1. What would you eat for breakfast?

____ 2. What would you eat for lunch?

____ 3. What would you eat for supper?

____ 4. Where would you sleep?

____ 5. Where would you take a bath/shower?

____ 6. Where would you eat?

____ 7. Where would you go to the bathroom?

____ 8. Show me a tree?

____ 9. Show me water?

____10. Show me flowers?

____11. Show me a bush?

____12. Show me grass?

____13. Show me some rocks?

____14. Show me a leaf?

____15. Show me the sky?

____16. Show me sand?

APPENDIX G-10

SCHOOL _____ DATE _____

CHILD _____ AGE _____

TEACHER _____

PRE-TEST

1. We climb _____ a hill.
2. We run _____ a hill.
3. We cook food on our _____ _____.
4. Point to a tree, sky, flower, log, branch, grass, creek, etc.
5. Stand in front of the tree. Stand in back, and to the side of the tree.
6. The color of the sky is _____.
7. The color of the grass is _____.
8. We wash dishes in a _____ _____ _____.
9. What are the three meals we eat during the day?_____

   _____, and _____
10. Is the fire _____ or cold?
11. Spring is warmer than winter. True or False
12. What are some noises you hear when you're outdoors?_____, _____,

    _____, _____, _____, _____, _____.
13. What do you see in the sky at night?_____ _____
14. What do you see in the sky during the day?_____ _____ _____
15. Another name for a walk in the woods is a _____ in the woods.
16. We all slept in a _____ _____.
17. What did you like best about camp?

APPENDIX H

SCHOOL _____ DATE _____

CHILD _____

_____-TEST

1. The most important rule in going through an unknown woody area is:

   a) watch for wild animals
   b) always mark your trail
   c) take a friend

2. When marking a trail, put your markers

   a) far apart
   b) close together

3. When marking a trail use something that:

   a) is bright
   b) blends in with the trees
   c) will blow away when you've finished

4. In swamp study we use a _____(telescope,mirror,magnifying glass) to make things bigger.

5. To observe swamp creatures under a microscope we use:

   a) a table
   b) a plate
   c) a glass slide

6. When shooting a bow and arrow the most important rule is:

   a) only shoot one arrow at a time
   b) don't retrieve your arrows
   c) stand next to the person shooting

7. When shooting a bow and arrow, the person behind you should

   a) hand you your next arrow
   b) keep everyone quiet
   c) watch where your arrows go

8. I learned _____at camp.

9. I liked _____best at camp.

10. I had a _____time at camp.

APPENDIX I-1

SCHOOL_____ DATE_____

NAME _____

_____-TEST

DIRECTIONS: Mark the following statements T if they are true and F if they are false.

_____1. A pipette looks like an eye dropper.

_____2. Water which has too much acid or too much alkaline may be polluted.

_____3. A final change from blue to a clear color in the testing for dissolved oxygen shows that there was no dissolved oxygen in the water.

_____4. Chlorine is used to kill germs in water.

_____5. Some nitrate in water is normal.

_____6. Too much nitrate in water is not good.

_____7. No phosphate in water is normal.

_____8. Too much phosphate in water may lead to the growth of too much algae.

_____9. Chlorine is not supposed to be in water found in the woods.

_____10. Too much carbon dioxide in water is not good for fish.

APPENDIX 1-2

NAME: _____

PRE-TEST

WATERSHED

1. This is a _____.
2. This is a _____.
3. This is a _____.

swamp river bed forest

4. What is under the ground? _____
5. This is a lake.
   There is too much water.
   Now it will make a _____.

lake river swamp

Score _____

PHOTOGRAPHY

1. Draw a camera.
2. What do you put in a camera? _____

film paper

Score _____

TREES

1. What is outside of the tree? _____

roots bark stem

2. Leaves make _____.

water flowers food

3. Roots keep the _____ in the ground.

water sun bark

4. All trees have the same leaves.

Yes _____ No _____

5. Many trees make a _____.

swamp river forest

BIRDS

1. Birds are covered with _____.

feathers fur scales

2. Birds have _____.

noses arms bills

3. Birds breathe with _____.

noses lungs ears

4. Birds have _____.

two wings four legs two tails

5. Birds eat _____.

insects sandwiches milk

Score _____

INSECTS

1. All insects have _____legs.

8 6 10 12

2. Draw a picture of a butterfly. Color it.

3. All insects can fly.

Yes _____ No _____

4. What insect bites? Circle the right answer.

Butterfly Mosquito Ladybug

5. A _____ can jump.

Ant Butterfly Grasshopper

Score _____

TOTAL SCORE _____

APPENDIX J

TEACHER _____ DATE _____

NAME _____ SCHOOL _____

_____-Test

MAP SKILLS

DIRECTIONS: Read each sentence. Mark a T if it is true. Mark an F if it is false.

A.

_____1. Symbols are little signs that stand for things on a map.

_____2. Direction is important when making maps.

_____3. North will be at the top of your map.

_____4.

_____5. When you draw a map, you make the buildings all the same size.

_____6. A scale of a map is a key on a map used to measure distances.

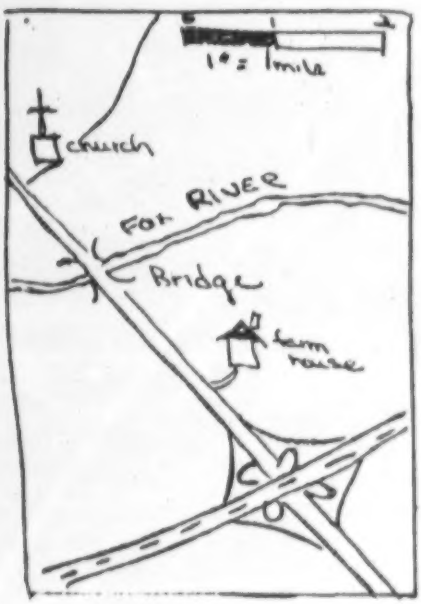
_____7. A legend tells you what the symbols mean.

_____8. A key is another word for a legend.

_____9. If you draw a map of an area at Camp on a piece of paper, you will draw a flat map.

B.

DIRECTIONS: Use the map. Answer the questions about the map.



10. How far is it from the church to the bridge?

_____

11. How far is it from the church to the farmhouse?

_____

12. How long is Fox River?

_____

TEACHER_____ DATE_____

NAME _____ SCHOOL_____

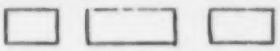
MAP SKILLS

C.

DIRECTIONS: Tell what the symbols mean. Example: Lake or Pond

13. XXXXXXXXXXXXXXXXXX _____

14. _____

15.  _____

16 16. _____

17. _____

18. _____

19. _____

20. _____

APPENDIX K

TEACHER _____ DATE _____

SCHOOL _____ CHILD _____

Pre/Post

True or False

_____1. Plants, birds, and insects are living things.

_____2. Birds have teeth.

_____3. Insects have 6 legs.

_____4. A frog lives in water and on land.

_____5. You can find water under the ground.

_____6. A swamp has no trees, grass or bushes.

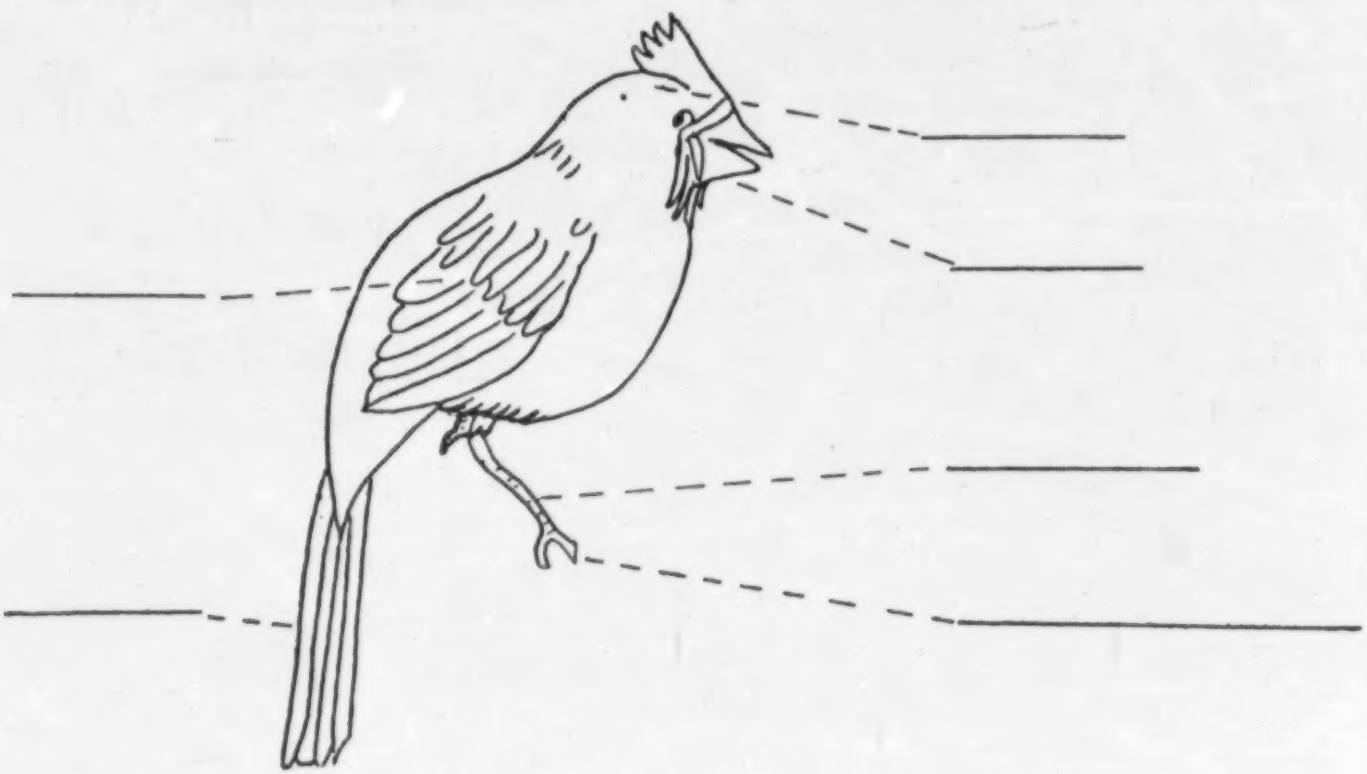
_____7. A terrarium grows in the woods.

_____8. Insects have no teeth.

_____9. You can tell time with the sun.

_____10. Birds eat meat.

Leg Foot Wing Tail Head Bill



This is a bird that is red. It is a _____.

APPENDIX L

NAME _____ DATE _____

SCHOOL _____

_____-TEST

1. Name two plants that grow on the side of trees.

   1)_____ 2)_____

2. What might you find under a rotted log?_____

3. What would you look for if you wanted to find out if an animal was nearby?

   _____

4. Name two non-living things that you can find in or near a pond.

   1)_____ 2)_____

5. Name two living things that you can find in or near a pond.

   1)_____ 2)_____

6. Name two animals whose babies are hatched.

   1)_____ 2)_____

7. Name four parts of a plant.

   1)_____ 2)_____

   3)_____ 4)_____

8. Name four things you can do to help keep the out-of-doors beautiful.

   1)_____ 2)_____

   3)_____ 4)_____

9. What safety precautions would you take when making or putting out a fire?

   _____

10. What are your five senses?

    1)_____ 2)_____

    3)_____ 4)_____ _____

    5)_____

APPENDIX M

SCHOOL _____ DATE _____

NAME _____

_____-TEST

1. What color is grass?_____
2. Name something in the woods that is brown._____
3. What word would you use to tell about the bark of a tree._____
4. What would you find under a rotten log?_____
5. What is the difference between an old tree and a young one?_____
6. What lives in a pond besides fish?_____
7. What do rocks under water feel like?_____
8. What do you find under pine trees?_____
9. What kind of animals live in trees?_____
10. What sounds do you hear at night?_____

APPENDIX N

PRE-TEST

1. Fish and plants can live in polluted water. True or False

2. Only big business or government can help stop pollution. True or False

3. Why should every day be earth day?_____

_____

4. _____are fair weather clouds. a. Cumulus, b. Nimbus, c.Stratus

5. Water freezes at _____degrees.

6. We use a _____to observe the stars and moon more closely.

   a. Mirror
   b. Telescope
   c. Microscope

7. We use a _____to observe pond life more closely.

   a. Hand lens
   b. Telescope
   c. Microscope

8. The Michigan State fish is _____.

   a. Bass
   b. Trout
   c. Carp

9. Michigan has a seasonal climate with four seasons for us to enjoy. True or False.

10. The _____River flows through Camp Rotary.

    a. Huron
    b. Clinton
    c. Raisin

11. We should be able to see Bluejays, Robins, Cardinals and Sparrows at Camp Rotary. True or False

12. Keeping our bodies clean while at camp is important for good health. True or False

13. The four food groups help to keep us healthy. True or False

14. A compass tells us_____.

15. A clock tells us_____.

16. The 2 main families of trees are_____and_____.

APPENDIX O

CHILD'S NAME: _____ DATE _____

TEST: _____

TEST - CAMP ROTARY

1. Name 3 things you can find in a forest.
2. What kind of tree keeps its leaves all year?
3. Name 2 things pine trees give us.
4. Name 2 things you can hear in a forest.
5. What makes the rocks in a river, stream or lake slippery?
6. Name one way of keeping our lakes and rivers clean.
7. Name one way of keeping our land clean.
8. How can a compass help you?
9. How do you cook hamburgers on an outside grill?
10. Name two different craft items you can make at camp.
11. Why is it so important to clean up after camping?

APPENDIX P-1

BOVENSCHEN
TRAINABLE SESSION #3
Pre/Post

FEW

Question: Which has a few?

1. group of bean bags
2. groups of blocks
3. plant leaves

FARTHEST

Question: Which is farthest?

1. place in hall....blue, brown, pink chair
2. place in desk....red, yellow, blue crayons
3. think problem...."What is farther, the door, the office, the bus?"

AFTER

1. What do you do after you get on the bus?
2. What does the cookie look like after you eat it?
3. What does your hair look like after you wash it?

HALF

Question Show me half a_____

1. whole, half, quarter of a sandwich
2. whole, half, quarter of an orange
3. whole, half, quarter of a piece of paper

SEPARATED

Question: Which _____is separated?

1. jars
2. lids from jars
3. children in the room

If answered correctly, check under heading.

FEW	FARTHEST	AFTER	HALF	SEPARATED
1.	1.	1.	1.	1.
2.	2.	2.	2.	2.
3.	3.	3.	3.	3.

TRAINABLE SESSION #4
Pre/Post

Which has a few?

Show the children samples of

1. Plates of cookies
2. Groups of beanbags
3. Dishes of beads

Show me half a _____

4. Piece of paper
5. Orange
6. Sandwich

Which is farthest?

Show the children pictures of

7. 3 boys
8. 3 trees
9. 3 chairs

What happens after you _____

10. Wash your hands
11. Get on the school bus
12. Put toothpaste on your toothbrush

Which one is separated?

Show children groups of objects, with one by itself

13. Jars
14. Bottles of glue
15. Blocks

APPENDIX P-3

TRAINABLE 5th SESSION

Pre/Post

WIDEST

1. Which part of the river is widest?
2. Which log is widest?
3. Which child is widest?

MOST

4. Which plate has the most?
5. Which pile of snowballs has the most?
6. Which cup has the most water?

BETWEEN

7. What is between here and that tree?
8. What is between your head and feet?
9. What is between the road and here?

SEVERAL

10. Show me several pencils.
11. Which pile has several candies?
12. Show me several children.

CENTER

13. (3 children line up) Who is in the center?
14. (3 blocks) Which one is in the center?
15. (Cherry centered candy. The student bites into it) What is in the center?

TRAINABLE SESSION #6

Pre/Post

Put a check in the box if the student has the right answer.

1. What do you do with maple syrup?
2. Where do you get maple syrup from?
3. Where else do you get maple syrup from? (ask if #2 is store)
4. Show me a maple tree. (Show child 3 pictures: pine, maple, weeping willow)
5. How do you get the sap out of the tree?
6. What do you put the sap in?
7. What do you do to the sap to make it into syrup?
8. What do you do after it boils down?
9. How do you store it until it is ready to use?
10. Why keep it cold?

APPENDIX P-5

TEACHER _____ DATE _____

SCHOOL _____

CHILD _____

QUESTIONS:

1. Which child is tallest?
2. Which tree is tallest?
3. Which flower is tallest?
4. Show me the tree in the middle?
5. What is in the middle of the river?
6. What is in the middle of the sandwich?
7. Show me the widest log.
8. Show me the widest road.
9. Show me the widest part of the river.

APPENDIX P-6

TEST

1. What game do you play with a bat and ball?
2. How many bases are there?
3. Show me first base. (Use pictures)
4. Show me second base. (Use pictures)
5. Show me third base. (Use pictures)
6. Where does the pitcher stand?
7. How many strikes for an out?
8. Count to three. (rate)
9. There are two teams, boys and girls, which one are you on?
10. What do you do when you hit the ball?